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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:  
Agrawal, et al.

Serial No.: 10/624,069

Filed: July 21, 2003

Group Art Unit: 2161

Examiner: Padmanabhan, Kavita

Atty. Docket No.: ARC920030034US1

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571-273-8300) on 11/2/06

  
Pamela M. Riley

For: MINING ASSOCIATION RULES OVER PRIVACY PRESERVING DATA

PETITION TO THE DIRECTOR UNDER 37 C.F.R. §1.182

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Director of the USPTO  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Sir:

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OFFICE OF PETITIONS

Applicants hereby petition the Director to find that the declarations (see Attachments A and B) submitted on April 11, 2006 were properly executed and were sufficient to establish that the relevant portions of prior art references cited as the basis for the rejection of the claims in the present application were derived from the Applicants' own work and, thus, should have been removed as a reference. In the alternative, the Applicants request that the Director reconsider and reverse the Examiner's decision to refuse to enter the declaration (see Attachment C) that was submitted on September 26, 2006, after the final rejection dated June 28, 2006, but before a notice of appeal.

10/624,069

1

NOV - 7 2006

## OFFICE OF PETITIONS

More particularly, on January 11, 2006, claims 1-24 were rejected under 35 U.S.C. §102(a) as being anticipated by Evfimievski, "Randomization in Privacy Preserving Data Mining," December 2002, ACM SIGKDD Explorations Newsletter, Vol. 4, Issue 2, pp. 43-48 (referred to hereinafter as "Randomization in Privacy Preserving Data Mining" (December 2002)). Applicants traversed these rejections because the relevant portions of "Randomization in Privacy Preserving Data Mining" (December 2002) were derived from a work of the applicants (namely, Evfimievski, R. Srikant, R. Agrawal and J. Gehrke, "Privacy Preserving Mining of Association Rules," Proc. Of 8<sup>th</sup> ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD), July 2002) and that this work of the applicants also formed the basis for the present patent application. Thus, the publication, "Randomization in Privacy Preserving Data Mining" (December 2002), should have been removed as a reference (see MPEP 2132.01, Ex parte Hirschler, 110 USPQ 384 (Bd. App. 1952) and Ex parte Kroger, 219 USPQ 370 (Bd. Pat. App. & Int. 1982)).

On April 11, 2006 a declaration by Alexandre Evfimievski (see Attachment A) and another declaration by Johannes Gehrke (see Attachment B) were filed under 37 C.F.R. §1.132 supporting this position. These declarations contained the following information:

(1) Alexandre Evfimievski was the sole author of "Randomization in Privacy Preserving Data Mining" (December 2002). "Randomization in Privacy Preserving Data Mining" (December 2002) was an overview of research in the field of privacy preserving data mining and was derived from several papers. The

NOV - 7 2006

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relevant portions that were cited in the Office Action as the basis for the rejection of all pending claims were specifically derived from "Privacy Preserving Mining of Association Rules" (July 2002). That is, the Office Action referred to the discussion of "randomization" on pages 43-45 of "Randomization in Privacy Preserving Data Mining" (December 2002) as the basis for the rejection of all pending claims. The source of the information contained in this randomization discussion was cited as "Privacy Preserving Mining of Association Rules" (July 2002) (see page 43, right column, last paragraph, line 1 and page 45, left column, line 24) and was further acknowledged by the author, Alexandre Evfimievski, in his originally submitted declaration under 35 U.S.C. §1.132.

(2) "Privacy Preserving Mining of Association Rules" (July 2002) was published on July 23, 2002 in conjunction with The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining that was held July 23-26, 2002. Ramakrishnan Srikant, Rakesh Agrawal, Johannes Gehrke and Alexandre Evfimievski are all co-authors of "Privacy Preserving Mining of Association Rules" (July 2002). This paper, "Privacy Preserving Mining of Association Rules" (July 2002), was the basis for the present patent application (U.S. Patent Application Serial No. 10/624,069, filed on July 21, 2003) and specifically discussed the invention defined by claims 1-24. Rakesh Agrawal, Ramakrishnan Srikant and Alexandre Effimievski are joint inventors of the invention defined by claims 1-24 in the present application. Although Johannes

10/624,069

3

Gehrke is listed as a co-author on "Privacy Preserving Mining of Association Rules" (July 2002), he acknowledges by declaration under 35 U.S.C. §1.132 that he is not an inventor of the invention defined by claims 1-24 of the present application.

On June 28, 2006, the Examiner issued a final rejection of all claims indicating that the declarations (see Attachments A and B) filed under 37 C.F.R. §1.132 were insufficient to overcome the rejection of claims 1-24 over the publication "Randomization in Privacy Preserving Data Mining," ... because they were (a) not properly executed, (b) did not establish that the reference is a publication of Applicant's own invention, (c) did not provide sufficient facts and documentary evidence supported by actual proof and (d) did not refer to the claims, prior to the date of reference.

The Applicants submit that these declarations were properly executed. Specifically, the declarations were submitted under 37 C.F.R. §1.132 to establish attribution and, thus, do not require the signature of all of the inventors, as indicated by the Examiner. That is, MPEP§715.04 sets out the formal requirements for parties making an affidavit or declaration under 37 C.F.R. §1.131. 37 C.F.R. §1.131 provides that declarations "to establish invention of the subject matter of the rejected claim prior to the effective date of the reference must be signed by all inventors." However, the declarations of Andre Evfimievski and Johannes Gehrke were not for the purpose of swearing behind the cited references under 37 C.F.R. §1.131. MPEP§716.10 discusses attribution and indicates that a declaration under 37 C.F.R. §1.132 may be filed to show

that “the reference discloses subject matter derived from the applicant ...”. Declarations filed under 37 C.F.R. §1.132 do not require the signature of all inventors (i.e., 1.132 simply indicates that “any evidence submitted to traverse the reject ... must be by way of an oath or declaration.”). Neither the MPEP, nor the rules set out in the C.F.R., indicate specifically who may make an oath or declaration under 37 C.F.R. §1.132. Thus, the Applicants submit that these declarations should have been entered and considered.

The Applicants further submit that declarations (see Attachments A and B) in combination with the April 11, 2006 response to the first office action clearly establish that the cited portions of the prior art reference were derived from the Applicants’ work, which was published less than a year before the date of the application and which was in fact the basis for the present application. Specifically, in the first office action the Examiner indicated in paragraph 10 that claims 1-24 were derived from pages 43-48 of the cited prior art reference. Not only did the cited portions of the prior art reference (i.e., “Randomization in Privacy Preserving Data Mining” (December 2002)) specifically credit “Privacy Preserving Mining of Association Rules (July 2002), but the author of the cited prior art reference signed an affidavit stating that the cited portions were derived from “Privacy Preserving Mining of Association Rules (July 2002)) (see Attachment A). Additionally, Attachments A and B further establish that this July 2002 paper was the basis for the present patent application and that while Johannes Gerkhe was a co-author, he was not an inventor of the claims. Thus, the cited prior art reference should have been removed as a reference. Note that while the April 11, 2006 response inadvertently did not include an attached copy of the paper “Privacy Preserving Mining of Association

Rules" (July 2002); a simple phone call could have been made by the Examiner to request a copy. Thus, the Applicants hereby petition the Director to find that the declarations (see Attachments A and B) filed on April 11, 2006 were properly executed and were sufficient to establish that the relevant portions of prior art references cited as the basis for the rejection of the claims in the present application were derived from the Applicants' own work and, thus, should have been removed as a reference.

The Applicants further disagreed with the Examiner's positions that the original declarations (see Attachments A and B) were not properly executed and that they were also insufficient for the purpose for which they were offered. Thus, on September 26, 2006, the Applicants filed a 37 C.F.R. §1.116 response traversing the rejections of the claims. In conjunction with this response, the Applicants submitted a revised declaration under 37 C.F.R. §1.132 (see Attachment C) (as opposed to filing of a petition) in an attempt to satisfy the Examiner and to move the application forward to allowance. However, in an advisory action dated October 17, 2006, the Examiner refused to consider this revised declaration. In support of the decision not to consider the revised declaration, the Examiner indicated that the applicant failed to provide a showing of good and sufficient reasons why the affidavit is necessary and was not earlier presented and that the "affidavits contain newly submitted evidence, which would require further consideration." The Applicants submit that there was a showing of good and sufficient reasons why this revised declaration was not submitted earlier and further that the fact that the revised declaration may have contained newly submitted evidence is irrelevant.

More specifically, the Examiner should not have refused to consider the declaration because it contained newly submitted evidence. 37 C.F.R. §1.116(e) relates to the submission of affidavits or other evidence after final rejection and provides: "An affidavit or other evidence submitted after a final rejection or other final action (§ 1.113) in an application or in an ex parte reexamination filed under § 1.510, or an action closing prosecution (§ 1.949) in an inter partes reexamination filed under § 1.913 but before or on the same date of filing an appeal (§ 41.31 or § 41.61 of this title), may be admitted upon a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented." Thus, the fact that an affidavit, submitted after a final rejection, may contain newly submitted evidence is not relevant.

Additionally, the revised declaration (see Attachment C) was clearly offered in response to requirements of the Examiner, which were specified in the final rejection. However, since these requirements were not necessary to establish attribution, as discussed above, they could not have been anticipated by the Applicants. That is, "attribution" was established by the April 11, 2006 response to the first office action in combination with the originally filed declarations (see Attachments A and B). That is, the cited portions of the prior art reference (i.e., "Randomization in Privacy Preserving Data Mining" (December 2002)) credited the work of the Applicants (i.e., "Privacy Preserving Mining of Association Rules (July 2002)). Furthermore, the author of "Randomization in Privacy Preserving Data Mining" (December 2002), Alexander Evfimievski, signed a declaration to that effect (see Attachment A). Thus, the Applicants could not have reasonably anticipated that additional information would be required by

the Examiner in order to explain to the Examiner exactly which portions of the cited prior art reference (i.e., "Randomization in Privacy Preserving Data Mining" (December 2002)) were derived from which portions of the Applicants' own work Applicants (i.e., "Privacy Preserving Mining of Association Rules (July 2002)). This required explanation was implicit in the Examiner's findings that the affidavits did not establish that the reference is a publication of Applicant's own invention, did not provide sufficient facts and documentary evidence supported by actual proof and did not refer to the claims, prior to the date of reference. The Applicants' response filed on September 26, 2006, under 37 C.F.R. §1.116, specified the purpose for which the revised declaration was offered and the "good and sufficient reasons" why that declaration was not filed earlier (as required by 37 C.F.R. §1.116(e)) were inherent in that response. Therefore, the Applicants further request that the Director reconsider and reverse the Examiner's decision to refuse to enter the declaration (see Attachment C) that was submitted on September 26, 2006, after the final rejection dated June 28, 2006, but before a notice of appeal.


It should be noted that the revised declaration is also signed by two of the inventors, Alexandre Evfimievski and Ramkrishnan Srikant, as opposed to Alexandre Evfimievski alone. The signature of another one of the inventors was obtained in an attempt to satisfy the Examiner. Rakesh Agrawal, the only inventor that did not sign the revised declaration, is no longer an employee of the Assignee, International Business Machines, Inc. (IBM), and all attempts to contact him in order to obtain his signature on proved futile. However, as discussed above, since this revised declaration is under 37 C.F.R. §1.132 and not 37 C.F.R. §1.131, Rakesh Agrawal's signature was not required.

In view of the foregoing, the Applicants hereby petition the Director to find that the declarations (see Attachments A and B) submitted on April 11, 2006 were properly executed and were sufficient to establish that the relevant portions of prior art references cited as the basis for the rejection of the claims in the present application were derived from the Applicants' own work and, thus, should have been removed as a reference. In the alternative, the Applicants request that the Director reconsider and reverse the Examiner's decision to refuse to enter the declaration (see Attachment C) that was submitted on September 26, 2006, after the final rejection dated June 28, 2006, but before a notice of appeal.

Please charge the petition fee under §1.17(f) of \$400.00 for a §1.182 petition and any other fees required to Attorney's Deposit Account No. 09-0441. However, in view of the above error being on the part of the Patent Office, Applicant hereby requests that this Petition fee of \$400.00 be refunded to Attorney's Deposit Account No. 09-0441.

Respectfully submitted,

Dated: 11/2/06

  
Pamela M. Riley  
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10/624,069

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In re Application of

Agrawal et al.

Serial No.: 10/624,069

Group Art Unit: 2161

Filed: July 21, 2005

Examiner: Padmanabhan, Kavita

For: MINING ASSOCIATION RULES OVER PRIVACY PRESERVING DATA

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## DECLARATION UNDER 37 C.F.R. §1.132

OFFICE OF PETITIONS

We, Alexandre Evfimievski, Ramakrishnan Srikant, and Rakesh Agrawal, are the Applicants and joint inventors of the above-referenced invention disclosed in U.S. Patent Application Serial No. 10/624,069 and hereby declare the following:

[0001] Alexandre Evfimievski is the author of the following paper:

"Randomization in Privacy Preserving Data Mining," December 2002, ACM SIGKDD Explorations Newsletter, Volume 4, Issue 2, pages 43-48, referred to herein as "Randomization in Privacy Preserving Data Mining" (December 2002) and attached (see Attachment A). This paper is the basis for a rejection of claims 1-24 of the above-referenced application under 35 U.S.C. 102(a).

[0002] "Randomization in Privacy Preserving Data Mining" (December 2002) is an overview of research in the field of privacy preserving data mining and is derived from several papers. Specifically, the "paper presents some methods and results in randomization for numerical and categorical data and discusses the issue of measuring privacy" (see Abstract).

Attachment A.

[0003] A. Evfimievski derived portions of the paper "Randomization in Privacy Preserving Data Mining" (December 2002) directly from the following paper, which was published on July 23, 2002, in conjunction with The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining held July 23-26, 2002.

A. Evfimievski, R. Srikant, R. Agrawal and J. Gehrke, "Privacy Preserving Mining of Association Rules," Proc. Of 8<sup>th</sup> ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD), July 2002, referred to herein as "Privacy Preserving Mining of Association Rules" (July 2002). (see Attachment B)

[0004] Each of the Applicants of the present invention are co-authors on the paper "Privacy Preserving Mining of Association Rules" (July 2002) along with J. Gehrke. "Privacy Preserving Mining of Association Rules" (July 2002) describes the invention defined by claims 1-24 and, specifically, was the paper on which the present application was based. The present application was filed within 1 year of the date of publication of "Privacy Preserving Mining of Association Rules" (July 2002).

[0005] J. Gehrke was a professor and advisor of A. Evfimievski, during the time period in which the idea for the invention was conceived. Although J. Gehrke is listed as a co-author of "Privacy Preserving Mining of Association Rules" (July 2002), he was not an inventor. It should be noted that although J. Gehrke's was not an inventor, his contributions to the paper were significant in that he acted as an advisor providing assistance in drafting the manuscript, in checking the manuscript for errors, in providing related literature for reference, etc. Additionally, J. Gehrke has read U.S. Patent Application Serial No. 10/624,069 and has declared that he is not an inventor of the invention defined by claims 1-24 (see Attachment C). We also acknowledge that J. Gehrke was not an inventor of the invention defined by claims 1-24. Therefore, the portions of "Privacy Preserving Mining of Association Rules" (July 2002) that describe the features of claims 1-24 describe the Applicants' own work and no one else's and further predate the cited prior art.

Attachment A

[0006] Regarding the rejected claims 1-24, the Office Action provides that the paper "Randomization in Privacy Preserving Data Mining" (December 2002) anticipates all of the various claimed features of the invention. However, many of the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002) are not the original work of A. Evfimievski, but rather were derived from the paper "Privacy Preserving Mining of Association Rules" (July 2002), which, as discussed above, describes the Applicants' own work. Therefore, it necessarily follows that the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002), which the Office Action indicates as disclosing the features of claims 1-24, were also derived from the Applicants' own work. Consequently, the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002) are not available as prior art against the present application.

[0007] More specifically, I derived the following portions of "Randomization in Privacy Preserving Data Mining" (December 2002) cited in the Office Action from the following portions of "Privacy Preserving Mining of Association Rules" (July 2002).

a. P. 43, left column, paragraph 3, lines 10 – right column, paragraph 1, line 2; p. 44, right column, paragraph 6, lines 2-4; and p. 45, left column, paragraph 4, lines 7-8 were each cited as disclosing both the feature of "randomly dropping true items from each transaction in said original dataset" and the feature of "randomly inserting false items into each transaction in said original data set."

(1) Regarding p. 43, left column, paragraph 3, lines 10 – right column, paragraph 1, line 2, no specific reference is credited for the cited sentence. However, the idea of "before sending its piece of data, each client perturbs it so that some true information is taken away and some false information is introduced" is derived directly from the statement "...in addition to replacing some of the items, we shall insert so many "false" items into a transaction that one is as likely to see a "false itemset as a

“true” one”, which is found in the second sentence of section 4 of “Privacy Preserving Mining of Association Rules” (July 2002).

(2) Regarding p. 44, right column, paragraph 6, lines 2-4, no specific reference is credited for the cited sentence. The first sentence in paragraph 6 that immediately precedes the cited lines refers specifically to “Privacy Preserving Mining of Association Rules” (July 2002) along with another reference, the publication date of which is later (i.e., August 2002). Additionally, this sentence, “Suppose that each client  $C_i$  has a transaction  $t_i$ , which is a subset of a given finite set of items  $I$ ,  $|I| = n$ ” does not amount to “randomly dropping true items from each transaction in said original dataset” or “randomly inserting false items into each transaction in said original data set”, but rather defines the transaction prior to randomly dropping true items therefrom.

(3) Regarding p. 45, left column, paragraph 4, lines 7-8, again no specific reference is credited for the cited sentence; however, the sentence immediately following explains the statement and does credit “Privacy Preserving Mining of Association Rules” (July 2002). Additionally, the idea of a “natural way to randomize a set of items is by deleting some items and inserting some new items is derived directly from the statement “... in addition to replacing some of the items, we shall insert so many “false” items into a transaction that one is as likely to see a “false itemset as a “true” one” (see second sentence of section 4 of “Privacy Preserving Mining of Association Rules” (July 2002)).

b. P. 45, left column, paragraph 8, lines 1-3 is cited in the Office Action as disclosing the features of “creating a randomized dataset by collecting said randomized transactions” and of “collecting said randomized dataset in a database.” Again, no specific reference is credited for the cited sentence, which states “In the set  $T'$  of randomized transactions available to the server, itemsets have supports very different from their supports in the nonrandomized dataset  $T$ .” However, this sentence is contained within a section of the paper that comprises a summary of the article “Privacy Preserving Mining of Association Rules” (July 2002) and, specifically, a summary of

section 4 of the article. More specifically, the idea of "creating a randomized dataset by collecting said randomized transactions" is derived directly from Definition 5 of Section 4.1 of "Privacy Preserving Mining of Association Rules" (July 2002). That is, randomization  $R$  is "a per-transaction randomization if, for  $T = (t_1, t_2, \dots, t_N)$ , we can represent  $R(T)$  as  $R(t_1, t_2, \dots, t_N) = (R(1, t_1), R(2, t_2), \dots, R(N, t_N))$ , where  $R(i, t)$  are independent random variables whose distributions depend only on  $t$  (and not on  $i$ ). We shall write  $t'_i = R(i, t_i) = R(t_i)$ ." It should be noted that the cited sentence on p. 45, left column, paragraph 8, lines 1-3 does not refer at all to collecting a randomized dataset in a database.

c. P. 45, left column, paragraph 9- right column, paragraph 6, line 9 is cited in the Office Action as teaching the feature of "mining said database to recover an association rule after said dropping and inserting processes by estimating nonrandomized support of said association rule in said original dataset based on randomized support for said association rule in said randomized dataset, wherein due to said creating of said randomized transactions, privacy breaches of said individual transactions are controlled during said mining." This portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived from Sections 4.3 and 4.4.

d. P. 45, left column, paragraph 4, line 13- paragraph 8, line 11 is cited in the Office Action as teaching the feature of "wherein said process of creating randomized transactions comprises per transaction randomizing, such that randomizing operators are applied to each transaction independently." This portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived directly from Sections 4.1.

e. P. 45, left column, paragraph 4, line 7- paragraph 8, line 11 is cited in the Office Action as teaching the feature of "wherein said process of creating randomized transactions is item-invariant such that a reordering of said transactions does not affect outcome probabilities." Again, this portion of "Randomization in Privacy Preserving

Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived directly from Remark 1 of Section 4.1.

f. P. 46, left column, paragraph 3, lines 1-13 is cited as teaching the features of "wherein said dropping of said true items and said inserting of said false items are carried out to an extent such that the chance of finding a false itemset in a randomized transaction relative to the chance of finding a true itemset in said randomized transaction is above a predetermined threshold" and "wherein said predetermined threshold provides that the chance of finding a false itemset in said randomized transaction is approximately equal to the chance of finding a true itemset in said randomized transaction." Again, this portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived from the second sentence in Section 4 and Section 4.1.

g. P. 45, left column, paragraph 8, line 1- paragraph 9, line 33 is cited as teaching the feature of "wherein said process of creating randomized transactions is performed independently on said transactions prior to the transactions being collected in said database." No specific reference is credited for the cited sentence. However, this sentence is contained within a section of "Privacy Preserving Mining of Association Rules" (July 2002) that does refer to and summarize "randomization" as described in "Randomization in Privacy Preserving Data Mining" (December 2002).

[0008] The above declarations are made according to the best of our recollection upon review of the appropriate documents and notes, and we hereby acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements that are made herein of our own knowledge are true and all statements that are made herein based on information and belief are believed to be true.


*Alexandre Evfimievski* SEPTEMBER 7, 2006  
Alexandre Evfimievski (Date)

\_\_\_\_\_  
Ramakrishnan Srikanth (Date)

\_\_\_\_\_  
Rakesh Agrawal (Date)

[0008] The above declarations are made according to the best of our recollection upon review of the appropriate documents and notes, and we hereby acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements that are made herein of our own knowledge are true and all statements that are made herein based on information and belief are believed to be true.

\_\_\_\_\_  
Alexandre Evfimievski (Date)

 Sep 1, 2006  
\_\_\_\_\_  
Ramakrishnan Srikant (Date)

\_\_\_\_\_  
Rakesh Agrawal (Date)

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DECLARATION UNDER 37 C.F.R. §1.132

OFFICE OF PETITIONS

I, Johannes Gehrke, hereby declare the following:

[0001] I am a co-author with Alexandre Evfimievski, Ramakrishnan Srikant and Rakesh Agrawal on the following paper:

A. Evfimievski, R. Srikant, R. Agrawal and J. Gehrke, "Privacy Preserving Mining of Association Rules," Proc. Of 8<sup>th</sup> ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD), July 2002, referred to herein as "Privacy Preserving Mining of Association Rules" (July 2002).

[0002] I have read U.S. Patent Application Serial No. 10/624,069, including claims 1-24.

[0003] "Privacy Preserving Mining of Association Rules" (July 2002) discusses the invention that is defined by claims 1-24 of U.S. Patent Application Serial No. 10/624,069.

0003

[0005] I understand that Alexandre Evfimievski, Ramakrishnan Srikant, and Rakesh Agrawal are joint inventors of the invention that is defined by claims 1-24 of U.S. Patent Application Serial No. 10/624,069.

[0006] Although I am a co-author of "Privacy Preserving Mining of Association Rules" (July 2002), I am not an inventor of the invention that is defined by claims 1-24 of U.S. Patent Application Serial No. 10/624,069.

[0007] The above declarations are made according to the best of my recollection upon review of the appropriate documents and notes, and I hereby acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements that are made herein of my own knowledge are true and all statements that are made herein based on information and belief are believed to be true.

  
Johannes Gelbre

1/10/2006  
(Date)

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We, Alexandre Evfimievski, Ramakrishnan Srikant, and Rakesh Agrawal, are the Applicants and joint inventors of the above-referenced invention disclosed in U.S. Patent Application Serial No. 10/624,069 and hereby declare the following:

[0001] Alexandre Evfimievski is the author of the following paper:  
"Randomization in Privacy Preserving Data Mining," December 2002, ACM SIGKDD Explorations Newsletter, Volume 4, Issue 2, pages 43-48, referred to herein as "Randomization in Privacy Preserving Data Mining" (December 2002) and attached (see Attachment A). This paper is the basis for a rejection of claims 1-24 of the above-referenced application under 35 U.S.C. 102(a).

[0002] "Randomization in Privacy Preserving Data Mining" (December 2002) is an overview of research in the field of privacy preserving data mining and is derived from several papers. Specifically, the "paper presents some methods and results in randomization for numerical and categorical data and discusses the issue of measuring privacy" (see Abstract).

[0003] A. Evfimievski derived portions of the paper "Randomization in Privacy Preserving Data Mining" (December 2002) directly from the following paper, which was published on July 23, 2002, in conjunction with The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining held July 23-26, 2002.

A. Evfimievski, R. Srikant, R. Agrawal and J. Gehrke, "Privacy Preserving Mining of Association Rules," Proc. Of 8<sup>th</sup> ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD), July 2002, referred to herein as "Privacy Preserving Mining of Association Rules" (July 2002). (see Attachment B)

[0004] Each of the Applicants of the present invention are co-authors on the paper "Privacy Preserving Mining of Association Rules" (July 2002) along with J. Gehrke. "Privacy Preserving Mining of Association Rules" (July 2002) describes the invention defined by claims 1-24 and, specifically, was the paper on which the present application was based. The present application was filed within 1 year of the date of publication of "Privacy Preserving Mining of Association Rules" (July 2002).

[0005] J. Gehrke was a professor and advisor of A. Evfimievski, during the time period in which the idea for the invention was conceived. Although J. Gehrke is listed as a co-author of "Privacy Preserving Mining of Association Rules" (July 2002), he was not an inventor. It should be noted that although J. Gehrke's was not an inventor, his contributions to the paper were significant in that he acted as an advisor providing assistance in drafting the manuscript, in checking the manuscript for errors, in providing related literature for reference, etc. Additionally, J. Gehrke has read U.S. Patent Application Serial No. 10/624,069 and has declared that he is not an inventor of the invention defined by claims 1-24 (see Attachment C). We also acknowledge that J. Gehrke was not an inventor of the invention defined by claims 1-24. Therefore, the portions of "Privacy Preserving Mining of Association Rules" (July 2002) that describe the features of claims 1-24 describe the Applicants' own work and no one else's and further predate the cited prior art.

[0006] Regarding the rejected claims 1-24, the Office Action provides that the paper "Randomization in Privacy Preserving Data Mining" (December 2002) anticipates all of the various claimed features of the invention. However, many of the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002) are not the original work of A. Evfimievski, but rather were derived from the paper "Privacy Preserving Mining of Association Rules" (July 2002), which, as discussed above, describes the Applicants' own work. Therefore, it necessarily follows that the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002), which the Office Action indicates as disclosing the features of claims 1-24, were also derived from the Applicants' own work. Consequently, the cited portions of "Randomization in Privacy Preserving Data Mining" (December 2002) are not available as prior art against the present application.

[0007] More specifically, I derived the following portions of "Randomization in Privacy Preserving Data Mining" (December 2002) cited in the Office Action from the following portions of "Privacy Preserving Mining of Association Rules" (July 2002).

a. P. 43, left column, paragraph 3, lines 10 – right column, paragraph 1, line 2; p. 44, right column, paragraph 6, lines 2-4; and p. 45, left column, paragraph 4, lines 7-8 were each cited as disclosing both the feature of "randomly dropping true items from each transaction in said original dataset" and the feature of "randomly inserting false items into each transaction in said original data set."

(1) Regarding p. 43, left column, paragraph 3, lines 10 – right column, paragraph 1, line 2, no specific reference is credited for the cited sentence. However, the idea of "before sending its piece of data, each client perturbs it so that some true information is taken away and some false information is introduced" is derived directly from the statement "... in addition to replacing some of the items, we shall insert so many "false" items into a transaction that one is as likely to see a "false itemset as a

“true” one”, which is found in the second sentence of section 4 of “Privacy Preserving Mining of Association Rules” (July 2002).

(2) Regarding p. 44, right column, paragraph 6, lines 2-4, no specific reference is credited for the cited sentence. The first sentence in paragraph 6 that immediately precedes the cited lines refers specifically to “Privacy Preserving Mining of Association Rules” (July 2002) along with another reference, the publication date of which is later (i.e., August 2002). Additionally, this sentence, “Suppose that each client  $C_i$  has a transaction  $t_i$ , which is a subset of a given finite set of items  $I$ ,  $|I| = n$ ” does not amount to “randomly dropping true items from each transaction in said original dataset” or “randomly inserting false items into each transaction in said original data set”, but rather defines the transaction prior to randomly dropping true items therefrom.

(3) Regarding p. 45, left column, paragraph 4, lines 7-8, again no specific reference is credited for the cited sentence; however, the sentence immediately following explains the statement and does credit “Privacy Preserving Mining of Association Rules” (July 2002). Additionally, the idea of a “natural way to randomize a set of items is by deleting some items and inserting some new items is derived directly from the statement “... in addition to replacing some of the items, we shall insert so many “false” items into a transaction that one is as likely to see a “false itemset as a “true” one” (see second sentence of section 4 of “Privacy Preserving Mining of Association Rules” (July 2002)).

b. P. 45, left column, paragraph 8, lines 1-3 is cited in the Office Action as disclosing the features of “creating a randomized dataset by collecting said randomized transactions” and of “collecting said randomized dataset in a database.” Again, no specific reference is credited for the cited sentence, which states “In the set  $T$  of randomized transactions available to the server, itemsets have supports very different from their supports in the nonrandomized dataset  $T$ .” However, this sentence is contained within a section of the paper that comprises a summary of the article “Privacy Preserving Mining of Association Rules” (July 2002) and, specifically, a summary of

section 4 of the article. More specifically, the idea of "creating a randomized dataset by collecting said randomized transactions" is derived directly from Definition 5 of Section 4.1 of "Privacy Preserving Mining of Association Rules" (July 2002). That is, randomization  $R$  is "a per-transaction randomization if, for  $T = (t_1, t_2, \dots, t_N)$ , we can represent  $R(T)$  as  $R(t_1, t_2, \dots, t_N) = (R(1, t_1), R(2, t_2), \dots, R(N, t_N))$ , where  $R(i, t)$  are independent random variables whose distributions depend only on  $t$  (and not on  $i$ ). We shall write  $r_i = R(i, t_i) = R(t_i)$ ." It should be noted that the cited sentence on p. 45, left column, paragraph 8, lines 1-3 does not refer at all to collecting a randomized dataset in a database.

c. P. 45, left column, paragraph 9- right column, paragraph 6; line 9 is cited in the Office Action as teaching the feature of "mining said database to recover an association rule after said dropping and inserting processes by estimating nonrandomized support of said association rule in said original dataset based on randomized support for said association rule in said randomized dataset, wherein due to said creating of said randomized transactions, privacy breaches of said individual transactions are controlled during said mining." This portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived from Sections 4.3 and 4.4.

d. P. 45, left column, paragraph 4, line 13- paragraph 8, line 11 is cited in the Office Action as teaching the feature of "wherein said process of creating randomized transactions comprises per transaction randomizing, such that randomizing operators are applied to each transaction independently." This portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived directly from Sections 4.1.

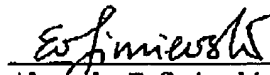
e. P. 45, left column, paragraph 4, line 7- paragraph 8, line 11 is cited in the Office Action as teaching the feature of "wherein said process of creating randomized transactions is item-invariant such that a reordering of said transactions does not affect outcome probabilities." Again, this portion of "Randomization in Privacy Preserving

Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived directly from Remark 1 of Section 4.1.

f. P. 46, left column, paragraph 3, lines 1-13 is cited as teaching the features of "wherein said dropping of said true items and said inserting of said false items are carried out to an extent such that the chance of finding a false itemset in a randomized transaction relative to the chance of finding a true itemset in said randomized transaction is above a predetermined threshold" and "wherein said predetermined threshold provides that the chance of finding a false itemset in said randomized transaction is approximately equal to the chance of finding a true itemset in said randomized transaction." Again, this portion of "Randomization in Privacy Preserving Data Mining" (December 2002) specifically references "Privacy Preserving Mining of Association Rules" (July 2002) and is derived from the second sentence in Section 4 and Section 4.1.

g. P. 45, left column, paragraph 8, line 1- paragraph 9, line 33 is cited as teaching the feature of "wherein said process of creating randomized transactions is performed independently on said transactions prior to the transactions being collected in said database." No specific reference is credited for the cited sentence. However, this sentence is contained within a section of "Privacy Preserving Mining of Association Rules" (July 2002) that does refer to and summarize "randomization" as described in "Randomization in Privacy Preserving Data Mining" (December 2002).

[0008] The above declarations are made according to the best of our recollection upon review of the appropriate documents and notes, and we hereby acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements that are made herein of our own knowledge are true and all statements that are made herein based on information and belief are believed to be true.

 SEPTEMBER 7, 2006  
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Rakesh Agrawal (Date)

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RLT Sep 1, 2006  
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